Petition for the Reconsideration and Modification of the National Transportation Safety Board's Findings and Determination of the Probable Cause for the Crash of TWA Flight 800

The TWA 800 Project
6/19/2013

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The Petitioners, which include investigators from the original National Transportation Safety Board (NTSB) investigation, family members of crash victims, former airline crash investigators, and concerned scientists**,** hereby request Reconsideration and Modification of the National Transportation Safety Board's Findings and Determination of the Probable Cause for the Crash of TWA Flight 800. This petition is based upon new and material evidence and analyses that refute the NTSB's original findings and is submitted in accordance with NTSB Reg. §845.41(a).

NTSB Reg. §845.41(a) states:

Petitions for reconsideration or modification of the Board's findings and determination of probable cause . . . will be entertained only if based on the discovery of new evidence or on a showing that the Board's findings are erroneous.

The Petitioners have reviewed the FAA radar evidence along with new evidence not available to the NTSB during the official investigation and contend that the NTSB's probable cause determination is erroneous and should be reconsidered and modified accordingly.

New evidence includes:
1. Two new analyses of FAA radar data,
2. Twenty FBI eyewitness interview summaries apparently not previously available to the NTSB.
3. Analysis of "spike-tooth" fractures found in multiple locations.
4. Evidence of explosive residue detected in multiple locations other than the forward cargo hold and floor boards.

Furthermore, based on a critical analysis of the new evidence, NTSB finding #8, which states "that witness observations of a streak of light…was burning fuel from the accident airplane in crippled flight..." will be shown to be erroneous.

New Evidence and Analyses

Two new analyses of the FAA radar evidence demonstrate that the explosion that caused the crash did not result from a low-velocity fuel-air explosion as the NTSB has determined. Rather, it was caused by a detonation or high-velocity explosion.

On page 260 of the NTSB Final Report the fuel-air explosion that caused the crash is described as an "overpressure event," which caused a forward wall of the tank to fracture "at its upper end and...rotate forward about its lower end." After this wall and other adjacent nearby fuel tank walls were recovered in large sections and analyzed, NTSB investigators working with scientists contracted by the NTSB concluded that the explosion was a low-velocity event or deflagration. Had the tank detonated, the NTSB investigators and outside experts surmised, the recovered center tank wreckage would have been significantly more fragmented.

The official probable cause for the crash therefore rests on the determination of a low-velocity overpressure event that resulted in failure of the center fuel tank at the forward aspect and that because of the location of the failure, forces would be directed longitudinally forward with respect to the airplane.

The radar evidence however, shows that a far more powerful and sideways projected explosion occurred simultaneously with the loss of the aircraft's electrical power, which sent debris perpendicular to the accident aircraft's flight path, traveling approximately 1/2 mile due south.

We have found no NTSB analysis of or accounting for this high-speed debris in the NTSB public docket or the final report.

Additional new material evidence includes a collection of twenty FBI eyewitness interview summary documents. Many of the witness statements summarized in this collection describe a firework or streak of light that ascended to where TWA Flight 800 exploded.

During the course of the initial investigation, the NTSB investigators as well as parties to the investigation were denied the opportunity to interview eyewitnesses or to review FBI form 302 eyewitness summary documents. At this crucial time, within two weeks of the crash and after interviewing hundreds of eyewitnesses, FBI investigators were finalizing a report that concluded there was a "high probability" that a missile caused the crash.[1]

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An internal CIA memo dated July 30, 1996 and attached to this petition discusses an FBI report being finalized at the time with the conclusion that there is "high probability that the incident was caused by a MANPAD [shoulder launched missile]". One of the FBI agents involved in the witness interviews and a co-author of this FBI report was described in the CIA memo as a former military pilot with radar and avionics experience.

The failure of the NTSB to provide investigators access to all of this data in the critical early stages of the investigation was unprecedented in that it violated well established NTSB policy and customs regarding data availability. Such a denial of data has never occurred prior to or since the TWA Flight 800 investigation.

We are attaching FBI form 302 witness summaries to this petition. These new witness summaries contain descriptions of rising streaks of light and other observations that do not corroborate the official crash sequence determined by the NTSB. Observations in the attached witness documents, combined with the observations of an important grouping of witnesses among the 670 summaries that the FBI ultimately provided to the NTSB during the investigation should be reviewed and collated to determine if the eighth finding in the NTSB report is, as we believe, erroneous and does not fairly summarize witness observations.

More than 100 spike tooth fractures were found on various aluminum wreckage items from areas throughout the aircraft. According to the NTSB Structures Group Factual Report (Exhibit 7A), "spike tooth characteristic[s] are indicative of a very rapid strain rate produced by a high energy event." We have found no NTSB report or analysis describing an event in the official crash sequence that could have caused these fractures.

We determined that the NTSB has not adequately investigated or accounted for the spike tooth fractures. Our analysis highlights a grouping of these fractures that remain unaccounted for in the official scenario. This grouping of fractures was found on wreckage items that landed in the earliest debris field and hit the water at relatively low velocities. These fractures most likely occurred while the aircraft was in the air. In the officially proposed crash sequence, there is no mention of any high energy event.

We urge the NTSB to conduct and publish the necessary analysis to determine the minimum energy and velocities required to generate representative spike tooth fractures on aircraft components landing in all three debris fields and to show which segment of the official crash sequence contained sufficiently high energy to create these fractures throughout the jetliner.

A large number of aircraft wreckage items tested positive for explosives. PETN, for example, was reportedly detected on the aircraft's right wing and on at least one floorboard. According to investigators who worked inside the reconstruction hangar, RDX was detected on a canvas cargo bay curtain. The NTSB final report only mentions three items testing positive for explosives--a "piece of canvas-like material and two pieces of floor panel"--and suggests they were deposited during a "dog-training explosive detection exercise"[2] that allegedly took place inside the passenger cabin of the accident aircraft six weeks before the crash. However, during such an exercise, explosives would not have been deposited on a curtain in the cargo bay, on the right

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2 NTSB Final Report on the crash of TWA Flight 800, pg. 118, 2000

wing, or on other wreckage items outside the passenger cabin.

Our investigation has determined that there were approximately 100 or more explosives detections. The NTSB should immediately request all evidence and information from the FBI regarding these detections, treat each detection as new evidence, and then thoroughly study and document them. A comprehensive report should then be published that explains the origin of each detection inside and outside of the passenger cabin. The NTSB should also carefully review all documents pertaining to the "dog-sniffing" exercise to verify how conclusively they prove that the exercise was, in fact, conducted on the jetliner that became TWA Flight 800. Our investigation has determined that the exercise did not, in fact, occur on that aircraft.

Concerns and Recommendations

During this review, we urge the NTSB to isolate and study all of the witness accounts that include descriptions of an ascending streak of light. These are very critical eyewitness accounts, since the NTSB previously determined that they included observations of the earliest moments of the crash. Unlike the majority of witnesses who only saw events near the end of the crash sequence, many witnesses in this early grouping described the trajectory of the ascending light and the characteristics of the explosion that apparently initiated TWA 800's demise.

Since the NTSB announced at its final hearing on the crash in August 2000 and stated in its eighth finding in the final report that the ascending light that eyewitnesses saw was TWA Flight 800 in crippled flight, it is important to compare these eyewitness accounts with what can be deduced about Flight 800's final moments.

In addition to an analysis of eyewitness evidence presented in this petition, and in a further effort to establish whether or not Finding 8 is accurate, we request that the NTSB conduct a detailed review of the Witness Group Chairman's August 2000 Sunshine hearing presentation. We believe that an objective review of the transcript will show that the Witness Group Chairman misrepresented the observations of important eyewitnesses, omitted important details from the accounts of airborne military witnesses, and significantly understated the number of witness accounts that conflicted with the official crash sequence.

Since the language in Finding 8 was provided by the Witness Group Chairman, we believe that his performance at the Sunshine hearing should be taken into account when considering whether or not that finding is accurate.

We also have serious concerns regarding the validity of the debris field database. The NTSB originally contracted Oceaneering to create and maintain the wreckage recovery location database, and then later assigned two NTSB employees as "project coordinators" for this effort. One of the two NTSB project coordinators was observed changing wreckage recovery location data for various wreckage items without informing or consulting the NTSB Group Chairman responsible for that wreckage.

That Group Chairman and several group members complained to NTSB management and a meeting was ultimately held to rectify the situation. According to the Group Chairman and the group members who attended this meeting, none of the location changes were satisfactorily justified. To this day, those location changes remain unchanged in the database. We request that this issue be revisited and that the database be revalidated.

We are concerned that the NTSB did not require certain investigative groups to provide analyses of their findings, which are required per the NTSB's own investigative protocols and which have been provided in all previous NTSB investigations. The NTSB should immediately order that these necessary analysis reports be produced.

Finally, we are deeply concerned that the NTSB has never met with the medical examiner to discuss the NTSB's findings or probable cause determination, as is customary to facilitate the official manner of death determination for the death certificates of the TWA 800 victims. Because of this lapse, the manner of death for all 230 victims is still pending. We urge the NTSB to meet with the Suffolk County Medical Examiner so that these death certificates can be finalized.

Should you have any questions regarding this petition or any of the information contained herein, please do not hesitate to contact me at any time.

Sincerely,

Henry F. Hughes
Senior NTSB Investigator, Ret.
The TWA 800 Project

New Analysis: Radar Tracking of High Velocity Debris

Within 8.5 seconds of TWA Flight 800 losing electrical power, a heavy concentration of light debris began appearing on the FAA radar between 1/3 and 1/2 mile due south of and almost perpendicular to TWA Flight 800's flight path. The majority of this debris stopped most of its horizontal motion and began falling to the ocean 1/2 mile south of where TWA Flight 800 lost electrical power. As it fell to the ocean, the wind carried this debris toward the SE for more than ten minutes. The Islip, White Plains, and JFK radar sites recorded the debris as it fell. When plotted over time, the radar returns from this debris appear as a distinctive, diagonal band, as shown on the NTSB radar plot below.

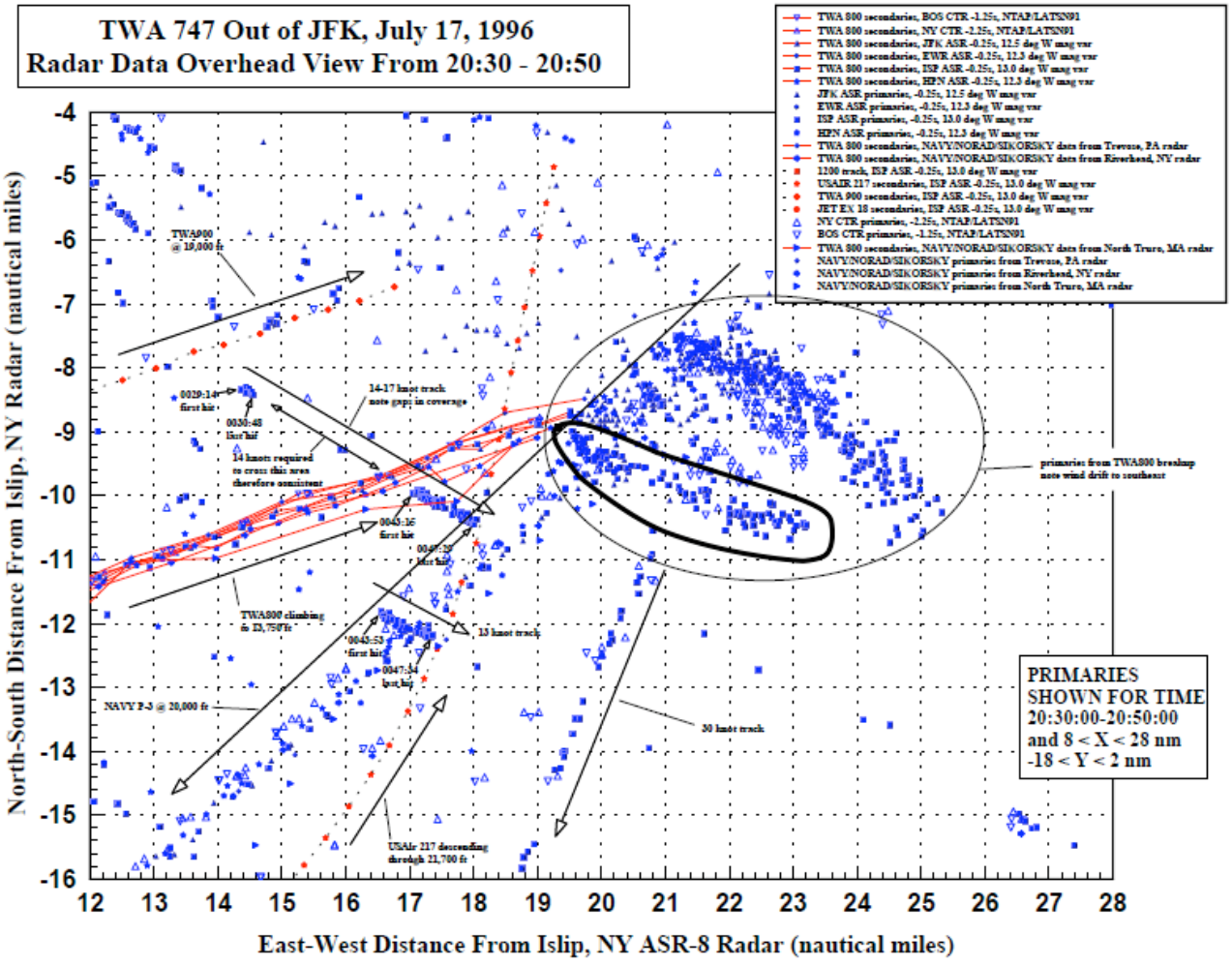

Figure 1: NTSB radar plot from page 44 of the Airplane Performance Study (Exhibit 13A). The band of debris in question has been circled by the petitioners with a thick black line.

At the 1997 NTSB hearing in Baltimore, NTSB investigator John Clark testified that the above-mentioned plume of radar returns (circled with a thick black line above) was "consistent with the explosion" that caused the crash. However, Mr. Clark did not provide a scientific basis for that conclusion nor did he attempt to further characterize that explosion by presenting an analysis of the subject radar returns. Our analysis of the speed and direction of the circled radar returns presented below demonstrates that the explosion responsible for the propagation of these returns was, in fact, a high velocity explosion--a detonation. The official NTSB theory for the crash is based on the assumption that the explosion in question was a low-velocity explosion or deflagration of fuel-air vapors and therefore cannot account for this radar-recorded detonation.

Ground Speed Calculation

To calculate the ground speed of the radar-recorded debris, Flight 800's position at the time of the explosion must be determined, as well as the time and position of the debris. All of this information can be obtained either directly or extrapolated from the raw radar data.

TWA Flight 800 exploded within approximately one second of the Islip radar site receiving its last secondary return (secondary returns indicate an aircraft has electrical power). Based on a linear extrapolation of the Islip radar returns from the last secondary return, TWA Flight 800 was 8.66 nautical miles south of the Islip radar antenna at the time. Approximately 8.5 seconds later, the Islip antenna recorded a radar return 9.12 nautical miles south of Islip antenna and due south of Flight 800's position when it lost electrical power. This was the first of a cluster of returns essentially perpendicular to TWA 800's track recorded by both the Islip and White Plains radar facilities.

If as stated by the NTSB this cluster of radar returns represents debris leaving the airframe during or after the initial explosion, its average ground speed was approximately (9.12 – 8.66)/8.5 nautical miles per second or 195 knots (100.3 m/s).

Error Analysis

To determine the uncertainties associated with the velocity of this debris as determined by radar, we calculated the upper and lower limits of the debris speed, based on the accuracy of FAA radar sites published by the NTSB in the "Addendum I to Main Wreckage Flight Path Study".

That Addendum lists the azimuth and range accuracies for the Islip, White Plains, and JFK radar sites as +/- 1/2 the azimuth change pulse (or ACP which is 0.04 degrees) and 1/16 nautical mile respectively. For brevity, we will focus on the Islip radar site; however, a similar analysis can be conducted with data recorded by the White Plains

site.

Since the returns in question appear nearly due south of where TWA Flight 800 lost electrical power, only an analysis of the north-south displacement is necessary. Therefore the accuracy of each radar hit in the north-south direction must be determined.

TWA Flight 800 was approximately 9 miles south and 20 miles east of the Islip radar antenna. The north-south portion of the range accuracy is +/- (1/16 nautical miles)*sin (theta), where theta is $\tan^{-1}(9/20) = 24.23^0$. Therefore, the north-south accuracy based on the range accuracy is +/- 0.026 nautical miles.

Since TWA Flight 800 was approximately 22 nautical miles away from the Islip antenna, the maximum azimuth accuracy is +/-22*sin (ACP) = +/- 22*sin (0.04) = +/- 0.0154 nautical miles. And the north-south portion of the azimuth accuracy is +/- 0.0154 * cos (24.23) = +/- 0.014 nautical miles.

Combining the two sources of error results in a total north-south accuracy of Islip radar returns in the vicinity of the crash of TWA Flight 800 of +/- (0.026 + 0.014) nautical miles = +/- 0.04 nautical miles.

When considering this source of error, the minimum ground speed of the debris is (9.08 – 8.7)/8.5 nm/second or 161 knots and the maximum is (9.16 – 8.62)/8.5 nm/second or 211 knots. Therefore, the Islip radar site recorded debris exiting the area of the aircraft, traveling approximately 1/3 to 1/2 of a nautical mile at an average ground speed of between 161 (82.8m/s) and 211 knots (108.5m/s).

Vector Analysis: Determining the Debris' Speed Relative to TWA Flight 800

To determine the average speed of this debris relative to the accident aircraft over the 8.5-second period, vector analysis is necessary. Before the explosion, any material on the aircraft that could become debris travels at the same velocity as the aircraft since it is still part of the aircraft. Therefore the aircraft velocity must be considered when calculating the speed of the debris within the aircraft's reference frame.

Since Flight 800 was traveling ENE (approximately 71 degrees from true north) at 385 knots (198 m/s), its northern speed component was 385* cos (71) = 125 knots (64.3 m/s) and it is labeled '**i**' in Figure 2 below. Since the debris was moving due south, its velocity (161 to 211 knots) must be added to the accident aircraft's northern velocity component (125 knots), yielding a minimum speed of 286 knots (147 m/s) and a maximum speed of 336 knots (172.9 m/s) in the south direction relative to the aircraft.

The eastern speed component of Flight 800 can be calculated in a manner similar to the northern speed component using 385* sin (71) = 364 knots. It is labeled '**j**' in Figure 2

below.

Using the Pythagorean Theorem, the average speed of the debris relative to the accident aircraft was between 463 and 495 knots or between 238 and 255 m/s.

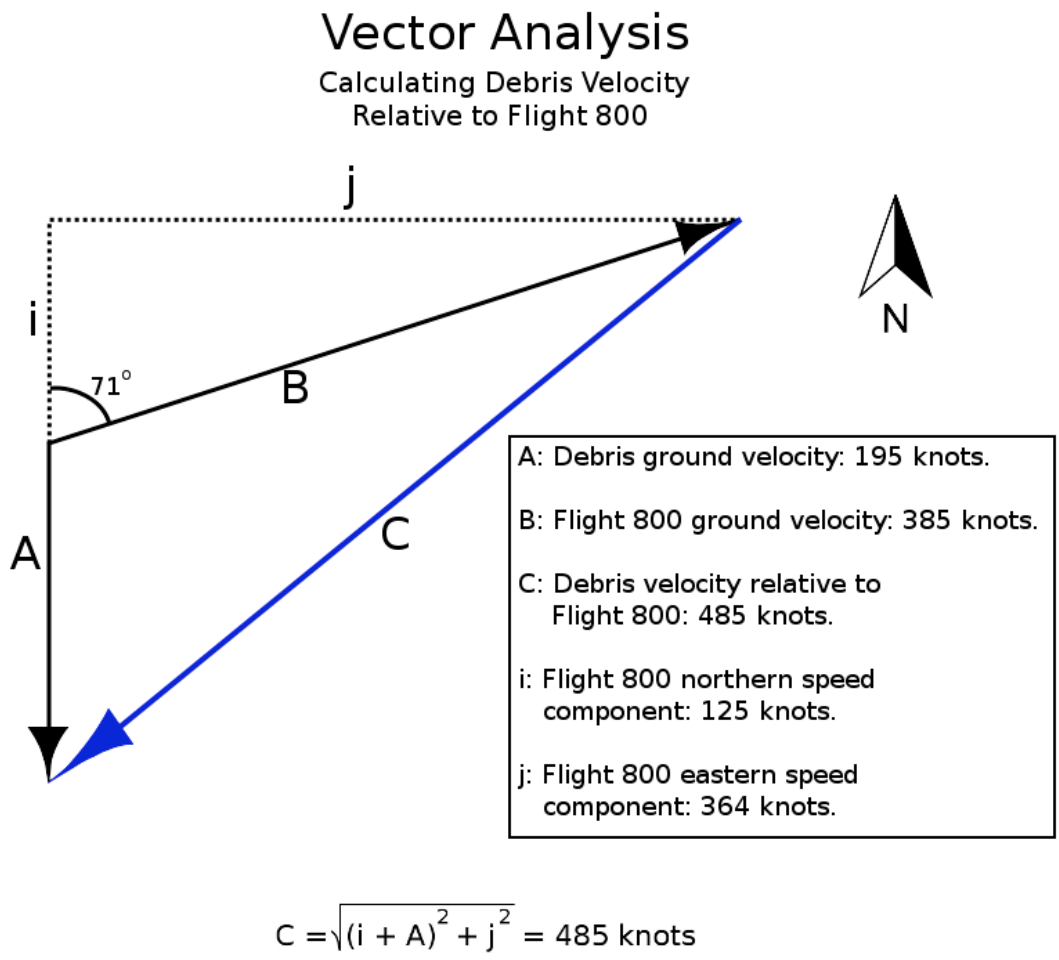

Figure 2: Addition of Flight 800 and debris velocity vectors. The blue line labeled **C** represents the debris' velocity relative to Flight 800. Lines **A** and **B** represent the ground velocities of the debris and Flight 800 respectively. Lines **i** and **j** represent Flight 800's northern and eastern speed components.

It is important to realize that the velocities discussed above are averages over 8.5 seconds. Because of the extreme forces of air resistance at those speeds and because the debris was likely very light since it can be seen drifting with the wind for more than ten minutes, its initial exit velocity was most likely considerably greater than its average speed over the 8.5 second interval. In fact, we show below that the exit velocity of the debris was far greater than the speed of sound (supersonic). Consequently, the explosion that ejected this debris was a detonation, not a fuel-air deflagration.

Even in the physically unlikely case that the average speed of the debris over eight and a half seconds represented the initial exit velocity of this debris, its velocity would have been more than twice that of the pressure wave created by a fuel-air deflagration. This is known because Dr. Melvin Baer of Sandia Laboratory, on behalf of the NTSB, calculated that the fuel-air deflagration resulted in a pressure wave traveling approximately 100 m/s.[3]

Furthermore, the NTSB proposed fuel-air deflagration caused the front wall of the center wing tank to rotate forward and downward, thus projecting any debris in a forward direction relative to the airplane. There is no sideways displacement of any aircraft wreckage from the alleged fuel-air explosion cited in the NTSB Sequencing Study or any other NTSB report.

Comparison with Official Scenario

As described above, the officially proposed fuel-air explosion was a low-velocity event or deflagration. This finding was reached by all the relevant experts who analyzed the wreckage, as well as by scientists who conducted real-world and simulated explosion tests. Their finding was based on the fact that most of the fuel tank structures[4] were recovered in large sections. Had the proposed explosion been high-velocity or a detonation, the fuel tank's structures would have been significantly more fragmented.

Dr. Melvin Baer of Sandia Laboratory was contracted by the NTSB to generate computer simulations of the proposed explosion, and in 1998 he issued the report "A Combustion Model for the TWA 800 Center-Wing Fuel Tank Explosion". As noted above, based on his computer modeling and a review of the aircraft wreckage, Dr. Baer determined that the velocity of the officially proposed fuel-air explosion would have been just 100 m/s.

Dr. Baer added that it was unlikely the explosion would accelerate any wreckage items to that speed because of inertia and other physical effects. Nevertheless, in an attempt

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Private email communication between Dr. Melvin Baer and independent investigator Dr. Tom Stalcup. Dr. Baer provided a flame speed of 100 m/s for the deflagration, but said that it would be unlikely that any debris reached this velocity from the deflagration alone.

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The exception was the left wall of the center wing fuel tank, called the left side of body rib (LSOB). This wall was severely fragmented, but pieces were curled inward, into the center wing tank, a finding that is inconsistent with this damage resulting from an internal explosion of the center-wing fuel tank.

to provide the NSTB's official scenario the best possible chance of matching the radar evidence, we will present a graphical simulation (Figure 3 below) which allows wreckage to reach this speed during the fuel-air deflagration and provides other exceptions.

1) Instead of the officially proposed explosion being forward moving as determined by the NTSB, we will assume its direction was rearward and to the right (see the red arrows in Figure 3).
2) We will prescribe an exit velocity equal to the explosion velocity: 100 m/s.
3) We will ignore the effects of air resistance outside the aircraft.

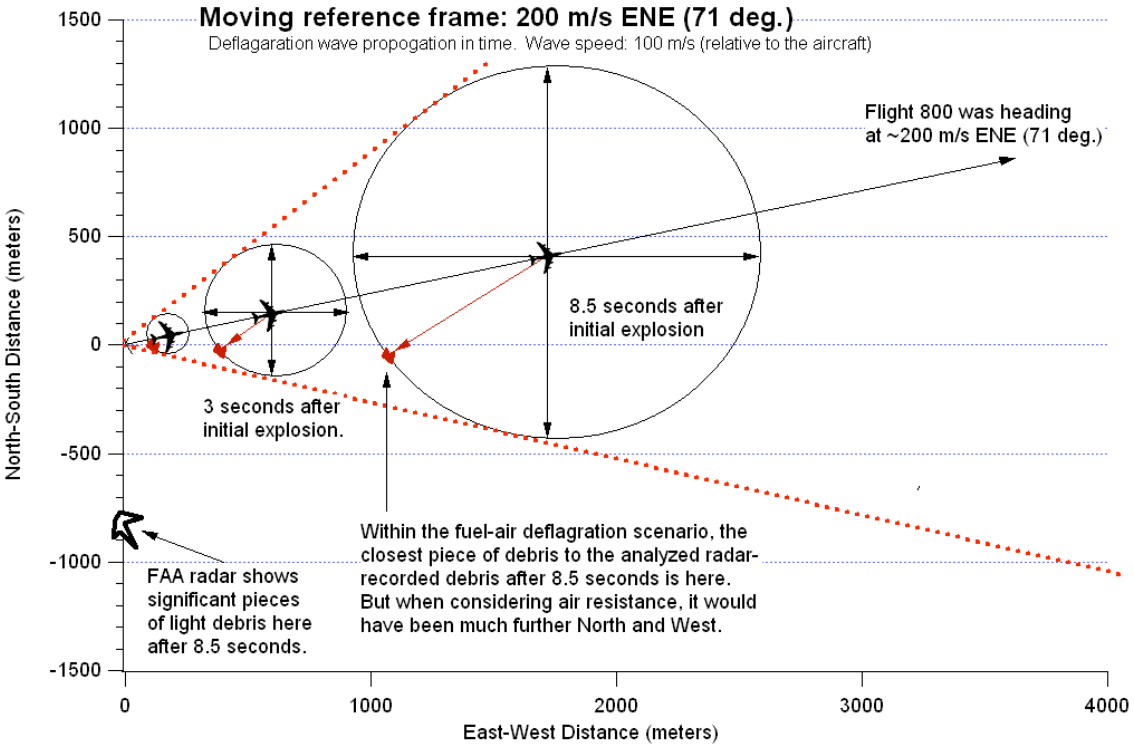

Figure 3: Maximum deflagration wave expansion at three points in time in TWA Flight 800's reference frame. Air resistance is neglected outside the aircraft to provide a best-case scenario for the NTSB's crash sequence. The red arrows point to hypothetical debris ejected by the deflagration. The 747 icons are not to scale.

In Figure 3, the circles represent the maximum expansion of the officially proposed fuel-air deflagration. The red dotted lines represent the maximum horizontal distance any piece of debris could have traveled in the first moments after the explosion. The hypothetical wreckage item colored red at the lower left edge of each circle represents the most dense and streamlined wreckage fragment, since the effects of air resistance would be lowest for such fragments. But as can be seen, even a fragment with those properties would still be more than one kilometer away from where radar sites recorded the debris plume at 8.5 seconds.

Since TWA Flight 800 was traveling about two times faster than the wave propagation speed of the proposed fuel-air deflagration, nothing from that deflagration could have reached the position where radar sites recorded the debris in question, which is represented by a large irregular shape on the left axis of Figure 3, about 800 meters south of the position of the initiation of the explosion. As discussed above in the *Error Analysis* section, the actual position of the debris detected on radar at 8.5 seconds could have been anywhere between approximately 1/3 and 1/2 of a nautical mile due south of the explosion, or between 700 and 1000 meters south of the explosion.

Ballistics Analysis

Since the aircraft began breaking up at 13,800 feet in altitude, air resistance at that altitude must be considered when studying any debris ejected from the airframe by the initial explosion. Formulas based on well understood aerodynamic principles can be used to estimate a range of possible exit velocities for the debris detected by radar. Using a computer program like the one described by Marion and Thornton's text[5] on classical dynamics, we generated theoretical ballistics curves with data points spaced at five millisecond intervals.

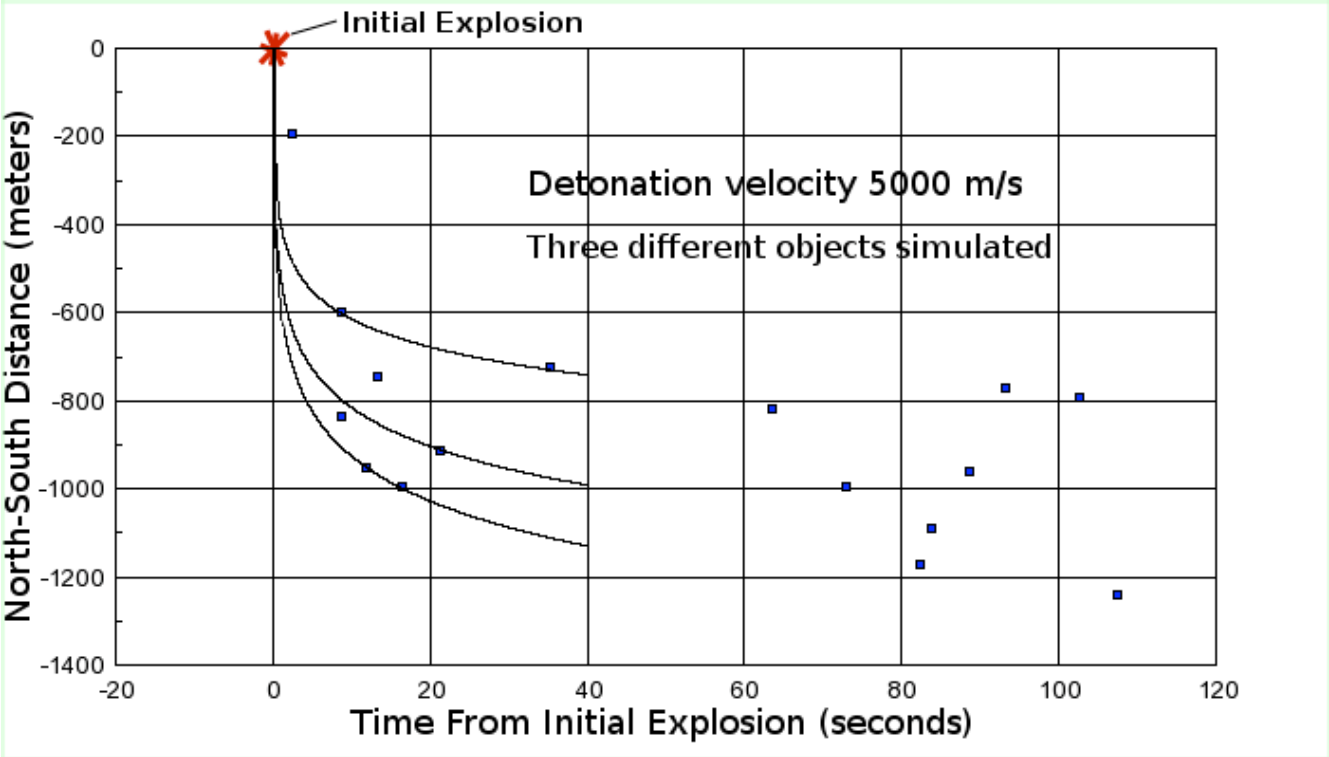

Figure 4: Three ballistics curves fit to north-south position vs. time from the Islip and White Plains radar sites. This plot only shows the north-south distances and speeds. Flight 800 was heading ENE at 385 knots. The small blue squares are a composite of Islip and White Plains FAA radar returns.

Multiple curves fit the data because objects of various shapes and sizes were likely

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5 Classical Dynamics of Particles and Systems, Third Edition, Jerry B. Marion and Stephen T. Thornton, Harcourt Braces Jovanovich, Inc, 1988, page 65.

ejected from the initial explosion and each would have different inertial and aerodynamic properties. Three ballistics curves fit the data well, each with exit velocities greater than Mach 4 (four times the speed of sound). Curves with exit velocities below Mach 4 and with low drag forces relative to their mass would not decelerate fast enough to fit the data. Curves with high drag forces relative to their mass and with exit velocities less than Mach 4 would not reach the earliest and southern-most debris recorded by radar.

Implications of the New Radar Analysis

We analyzed a dense cluster of radar returns that the NTSB confirmed was created by the explosion that caused the crash.

Two separate analyses show that debris tracked by multiple FAA radar sites moved too far, too fast, and in the wrong direction to have resulted from the officially proposed fuel-air deflagration. A vector analysis shows that even when air resistance is neglected, nothing in the official crash scenario can account for this radar evidence. An analysis that considers air resistance indicates that the debris left the area of the aircraft at a speed greater than Mach 4 (four times the speed of sound). Nothing in the official crash scenario can account for this very high velocity.

Erroneous Finding in NTSB Final Report: Finding 8

Finding 8 states that the "*streak of light reported by most of* [the streak of light] *witnesses was burning fuel from the accident airplane in crippled flight during some portion of the postexplosion preimpact breakup sequence...*"

We conducted a detailed review of the eyewitness evidence and determined that this finding is incorrect. A far greater number of witnesses who reported a streak of light gave testimony consistent with the streak originating at the surface or horizon rather than where the accident aircraft lost electrical power. Many reported that after rising off the surface, the streak of light climbed sharply and fast, exploding at its apex. The accident airplane did not rise sharply or fast off of the surface, and the NTSB final report mentions no explosion during crippled flight except for the eruption of fuel as TWA 800 descended to the ocean.

In an apparent attempt to match the official crash sequence to eyewitness observations, the NTSB generated simulations of the aircraft climbing in crippled flight. However, these simulations diverge from the radar data precisely when the climb begins, indicating that no such climb occurred.[6] There are also unexplained control surface

6 See the Figure 28d on page 99 of the NTSB Final Report on TWA Flight 800 and similar plots from NTSB Exhibit 22C and its Addendum. The simulation data in all of these plots diverges from

manipulations that appear to be more an effort to make the accident aircraft climb than to factually establish the aircraft's post-explosion flight path. A case in point is the official NTSB animation based on one of these simulations. It correctly shows the aircraft banking left after losing electrical power, but then—without explanation—shows the aircraft turning back to the right in order to perform a climb.

Such a climb in the simulated aircraft resulted in a commensurate decrease in ground speed of the airplane. This decrease in ground speed caused the simulated aircraft to fall far behind where FAA radar sites actually recorded the accident aircraft position supporting a conclusion that the aircraft did not climb at this point.

A few pilots in the air and some witnesses on the ground were watching TWA 800 before it exploded, and none reported seeing it climb sharply as depicted in the simulation. The NTSB Witness Group interviewed one such eyewitness at length. Captain David McClaine was asked if he saw any part of the accident aircraft climb, and he answered no.[7]

To determine whether or not the motion of the streak of light was consistent with the path of the accident aircraft, the streak must be compared to a valid simulation of the accident aircraft's post-explosion motion. FAA radar sites tracked the aircraft heading ENE and turning left just after losing electrical power. Since there was no loss of ground speed early in the crash sequence to account for any significant climb, the aircraft then likely rolled over and headed downward.

Since a majority of the streak of light eyewitnesses said that the streak rose upward (many saying that it rose off the surface of the water), it is clear from a thorough review of the FAA radar tracking of the accident aircraft and the eyewitness evidence, including the new witness documents provided with this petition, that the observed streak of light could not have been burning fuel from the accident airplane in crippled flight.

An Accurate Accounting of the Streak of Light

Two separate NTSB reports found a significant percentage of witnesses who said the

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the radar data points during the simulated climbs.

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Witnesses Group Chairman Factual Report, Appendix Z, Interview transcript Capt. David McClaine, March 25, 1999. During his NTSB interview, McClaine estimated that TWA Flight 800 exploded at an altitude of between 13 and 15 thousand feet. Its flight data recorder failed at the moment of the first explosion, just after recording an altitude of 13,800 feet. McClaine was asked if "any structure or anything else of this thing zoom[ed] up 1,000, 1,500, 3,000 feet at that time." McClaine answered "No."

streak of light rose off the surface or horizon[8] moments before Flight 800 exploded and fell to the ocean in flames. Therefore, it is important to both consider the possibility that a light did rise off the surface of the water near the flight path of Flight 800 just before it exploded and to determine what the entire event would look like to witnesses in the vicinity of Flight 800 watching from vantage points in the air, on the water, or on land.

In such a scenario, witnesses observing the entire sequence would see a light appear on the horizon and rise upward in the vicinity of Flight 800. Then the aircraft would explode, continue its momentum to the east and begin a descent to the ocean. At some point during the descent, as was determined by the NTSB and seen by eyewitnesses, the wings of the aircraft would break away releasing fuel that would ignite into one or more fireballs.

Nearly all of the 670 eyewitness accounts reviewed by the NTSB match the crash scenario described above. According to the NTSB Witness Group Study, 599 (89%) saw the large fireball or fireballs at the end of the sequence. Two hundred fifty-eight (39%) saw a streak of light and a large majority said the light ascended. Between 25 and 96 of the 258 said the streak of light originated at the surface or horizon.[7]

Most of the witnesses observed the fireball because it was the brightest event and occurred at the end of the sequence. Witnesses compared it to the setting sun or described it as a waterfall of flames. Many witnesses who saw earlier events continued watching until the fireball(s) disappeared in the distance. Entire groups of people reported seeing the fireball(s) after one member of their group pointed to the sky.

According to witnesses, and as determined by the NTSB, the rising light was one of the earliest events in the sequence. Many described it as a point of light. For anyone to see such a streak originate on the surface, they had to just happen to be looking directly toward the streak's point of origin as it started climbing. There would have been no other visual clues to look in that direction, as this was determined to be the first visual event.

A majority of people in groups with one person directing attention to it could have missed seeing it rise off the surface, because by the time their attention was directed toward it and they saw it, the streak may have already been in mid-flight and far above the surface. Therefore, the NTSB's statistic of between four and fourteen percent of the

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According to the original NTSB Witness Group Factual Report released in December of 1997, "102 [witnesses] gave information about the origin of the streak...96 [or 94%] said that it originated from the surface." According to the NTSB Witness Group Study released in February 2000 which relied on a more strict interpretation of the eyewitness accounts, out of 27 witnesses who gave information about the origin of a streak of light and who had unobstructed views to the surface or horizon, 25 (93%) said rose off either the surface or horizon.

total number of eyewitnesses seeing the streak's point of origin appears to be a reasonable estimate.

At the final Sunshine Hearing on the crash in August 2000, NTSB Witness Group Chairman Dr. David Mayer mentioned 56 eyewitness accounts that "didn't seem to fit"[9] the NTSB's scenario. These same eyewitness accounts, however, fit well into the scenario described above. In fact, nearly all of the witnesses who observed a streak of light described a scenario that essentially matched the above scenario.

New Eyewitness Evidence

We have obtained twenty FBI eyewitness interview summary documents (FBI form #302s) from the crash of TWA Flight 800 that we could not locate in the NTSB's public docket. We are therefore providing them to the NTSB as an attachment to this petition. To avoid confusion and any conflicts with existing NTSB witness documents that are numbered 1 to 755, we have numbered these documents 800 to 819.

In eight of the twenty FBI 302 summaries that we are submitting with this petition, eyewitnesses describe a rising streak of light before seeing the fireball(s).

New Photographic Evidence

One FBI interview summary provided with this petition mentions that an eyewitness provided the FBI with several photographs of a light or lights in the sky when TWA Flight 800 exploded. We urge the NTSB to request from the FBI this and any other photographic and video evidence the FBI received during its investigation into the crash of TWA Flight 800. All witness, photographic, video, or other evidence of lights or rising streaks off the East Coast of the United States before, during, and after the crash of TWA Flight 800 are relevant, and a thorough investigation into each event could lead to determining the actual cause of the crash.

NTSB Witness Group Sunshine Hearing Presentation

On August 23, 2000 at the NTSB Sunshine hearing in Washington, D.C. on the crash of TWA Flight 800, Witness Group Chairman Dr. David Mayer inaccurately described the observations of important eyewitnesses and omitted crucial details from the accounts of military eyewitnesses who were airborne at the time of the explosion. His conclusions

9 Witness Group Presentation by Dr. David Mayer, NTSB Sunshine Hearing, August 23rd, 2000

should be completely disregarded and a new, unbiased and accurate analysis of the witness testimony must be made and evaluated alongside the new and material evidence we are providing to this case.

We have listed some significant problems with the Witness Group Chairman's Sunshine hearing presentation below, and we urge the NTSB to conduct a detailed review of that presentation to identify and correct all of the problems.

Errors and Inaccuracies

Witness 649's FBI file includes four sketches and several FBI witness summaries. It is one of the most thorough and comprehensive set of eyewitness documents in the NTSB docket. The sketches and summaries describe an object ascending and traveling westward, spanning over ten degrees horizontally before approaching a second object that was at a position and altitude consistent with where Flight 800 lost electrical power. An explosion occurred where the two objects apparently met.

At the sunshine hearing, the Witness Group Chairman testified that Witness 649's observations "certainly do sound like a missile attacking the airplane." However, the Witness Group Chairman then discounted this witness evidence by incorrectly stating that witness 649's horizontal view of the accident was limited to just a few degrees--between "two flagpoles". The Witness Group Chairman used this incorrect information to conclude that the witness could not have seen the initiating event because it did not occur between these flagpoles. The word "flagpole" does not exist in witness 649's NTSB or FBI file, nor did this witness indicate to investigators that his observations were ever restricted to a degree that would render him unable to observe the initiating event. Based on the same incorrect information, the Chairman further concluded that witness 649 did not see a missile.

Although Witness 649 did reference a *telephone* pole in the description of where the rising projectile originated, Witness 649 never cited an adjacent telephone pole as a limit of his observations nor did he describe any significant visual obstructions. In fact, Witness 649 indicated that the projectile rose over and beyond other telephone poles, apparently colliding with TWA Flight 800 above structures in the distance, which were well to the right of where the projectile originated, and well below the line of site to the airborne collision. Critically, from Witness 649's perspective, the structures were on a line of site between 196^{o} and 209^{o} magnetic, and Flight 800 lost electrical power on a bearing line of approximately 197^{o} magnetic. Clearly, the Witness Group Chairman misspoke and/or misconstrued the evidence, and Witness 649's FBI file should not have been excluded from consideration.

Neither the Witness Group Chairman nor anyone from the NTSB ever interviewed Witness 649. When Dr. Mayer was Chairman of the NTSB Eyewitness Group, only one out of 670 eyewitness was interviewed by the NTSB. NTSB personnel never returned

to Witness 649's location or to any other eyewitness locations to obtain bearing lines to events in the sky based on the landmarks given.

The Witness Group Chairman provided blatantly inaccurate testimony about the observations of Witness 649 and erroneously discounted some of the most compelling and potentially reliable eyewitness evidence surrounding this tragic incident.

Airborne Military Eyewitness

The Witness Group Chairman's Sunshine hearing testimony should also be questioned and re-examined because he omitted important details provided by an experienced airborne military eyewitness who was in close proximity to the crash and who provided very compelling evidence of a missile strike.

On January 11, 1997, the original NTSB Eyewitness Group interviewed Major Frederick Meyer of the New York Air National Guard. According to the NTSB transcripts from this interview, Major Meyer was in a Black Hawk helicopter, descending into Gabreski Airport, when he saw a streak of light heading toward the area where TWA 800 crashed. At the end of a trajectory consistent with the streak of light, Major Meyer reported he observed explosions that he described to the original eyewitness group as:

> "…hard explosions. This looked like flak[10]. It's a hard explosion. It's like an HPX explosion, as opposed to soft explosion like gasoline..."

Major Meyer testified during his NTSB interview that while in Vietnam, he "flew a UH-2 Kaman Seasprite rescue helicopter". And during his tour, he had seen "three different types of missiles...SAM-1s, SAM-2s, and SAM-3s". He also testified that he could distinguish between different types of explosions, saying that some things "resemble anti-aircraft fire and other things are soft explosions; like if you saw somebody hit a fuel storage depot".

Even though Major Meyer was uniquely qualified to identify the type of explosion(s) that caused the crash, the Witness Group Chairman never mentioned these crucial details during the Sunshine Hearing Witness Group presentation.

Instead the Witness Group Chairman simply said Major Meyer "saw an explosion and a second explosion, and a large fireball".

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10 Flak is the explosion and ejection of shrapnel by a military explosive within an anti-aircraft shell.

Later during the hearing, NTSB Chairman Jim Hall mentioned a letter that Major Meyer sent to the NTSB stating that he felt the NTSB "ignored the eyewitness information". When Chairman Hall asked if this was true, the Witness Group Chairman answered "Absolutely not." Then a short time later, Chairman Hall asked the Witness Group Chairman "what did the helicopter pilot tell?" The Witness Group Chairman responded saying "He observed a streak in flight for one or two seconds and then he saw the enormous fireball develop."

Once again, the Witness Group Chairman failed to inform the NTSB board members of Major Meyer's expert testimony, in which he compared the explosion(s) that caused the crash to military ordnance. Given his years of combat experience and his vantage point, Major Meyer's testimony should have been seriously considered and discussed with the Board at great length, but it was not.

Significant Understatement of Witness Accounts that Conflict with the Official Crash Sequence

The Witness Group Chairman testified that there were fifty-six (56) witness accounts "that didn't seem to fit" into the official crash sequence. These 56 witnesses said they saw a streak of light rise off the surface and/or climb straight up or nearly so. However, this number significantly under counts the number of witness accounts that directly conflict with the official crash sequence**.** In his count, the Witness Group Chairman failed to include a significant number of eyewitnesses who described a streak of light heading in a direction that conflicted with the accident aircraft's flight path.[11]

Table 1 below provides raw NTSB statistics of the trajectories of the streak of light described in twenty-five eyewitness accounts that do not match the crippled flight path of the accident aircraft. These additional witness accounts brings the total to eighty-one (81) eyewitnesses providing observations that conflict with the official crash sequence. Further, if the work of the original NTSB Witness Group Chairman Norman Wiemeyer were considered, there would very likely be more than one hundred (100) eyewitness accounts that conflict with the official crash sequence.

Witness 386 is a good example of an eyewitness who reported a streak of light trajectory that conflicted with the official crash sequence, but was not included among the fifty-six witnesses the NTSB said conflicted with the official crash sequence. The

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11 These witness accounts do not have the Eastern component ascribed to TWA Flight 800 as it allegedly climbed in the official crash sequence. As the streak rose upward, many eyewitnesses said it moved westward, and many others said it moved to the south: two directions the officially climbing aircraft never traveled.

following is excerpted from this eyewitness' NTSB file:

> "It seemed like it came off the horizon and rose slowly, weaving as it continued upward. At first they thought it might have been a flare, but realized that it was too huge. It traveled diagonally at an approximate 70 degree angle going in a westerly direction...
>
> The object rose in the sky for approximately six (6) seconds, leaving a white smoke trail in its wake. It then disappeared from sight for approximately 1/2 second. After that time, without a sound of an explosion, a large oval ball of fire appeared just above the area where the object was last seen. ...[Witness 386] thought that the ball of fire came down traveling in an easterly direction. The ball broke into two separate balls of fire before it hit the water."

Witness 386 said the streak weaved as it climbed westerly (just as Witness 649 had reported and sketched). Flight 800 in crippled flight never traveled in that direction. Official crash sequence animations show TWA Flight 800 traveling in a slowly developing curve as it traveled east-northeast.

Witness 386's account and many others like it that clearly do not fit into the official crash sequence were not included in the 56 witness accounts that the Witness Group Chairman said did not fit.

Witness Number	Trajectory
319	as if further south"
523	"north"
232	"north"
524	"north"
499	"north"
226	"northwest"
345	"northwest"
637	"south"
715	"south"
276	"south"
492	"south"
467	"west"
179	"west"
385	"west"
540	"west"
135	"west"
88	"west"
648	"west"
90	"west"
506	"west"
658	"west"
521	"west"
535	"west"
386	"west"
127	"west"

Table 1: Twenty-five additional witnesses who reported a trajectory for the streak of light that is inconsistent with the trajectory of TWA Flight 800 in crippled flight. Taken from the NTSB Witness Group's raw eyewitness statistics.

Witness Group Analysis not Dependent on Climbing Aircraft

The Witness Group Chairman concluded that the ascending streak was TWA Flight 800 as it "maneuvered in crippled flight". However the NTSB could not simulate the aircraft performing a steep climb while matching FAA radar tracking.[12] In essence, the

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 See the Figure 28d on page 99 of the NTSB Final Report on TWA Flight 800 and similar plots from NTSB Exhibit 22C and its Addendum. The simulation data in all of these plots diverges from the East-West vs. Time radar data points during the simulated climbs.

radar evidence showed that the accident aircraft did not climb appreciably or at all after losing electrical power.

NTSB Chairman Jim Hall asked the Witness Group Chairman: “if you could show that the airplane did not climb after the nose departed, will that change your analysis?”

The Witness Group Chairman responded “No sir...”

This meant that without the airplane climbing to explain the ascending streak of light, the Witness Group Chairman would not change his analysis. Therefore he would have to either conclude that most of those who reported an ascending streak of light did not actually see it ascend or that the observed *rising* streak was the horizontally and downward moving aircraft.

The Witness Group Chairman's willingness to overlook such a significant number of eyewitness observations that clearly contradict an officially proposed scenario, to present grossly inaccurate accounts of what other eyewitnesses saw, and to omit crucial details from the observations of an expert military eyewitness when directly questioned about this witness' observations from the NTSB Chairman is troubling.

Findings

1. The explosion that caused the crash was external to the aircraft.

2. FAA radar sites recorded fast-moving debris that traveled perpendicular to the flight path, just after Flight 800 lost electrical power. A ballistics analysis of this debris plume shows that the explosion that accelerated this debris was high-velocity, a detonation. No mechanism or event in the official low-velocity fuel-air explosion theory can account for this radar evidence.

3. A significant number of credible eyewitness accounts are consistent with an external event.

4. The CIA produced an inaccurate crash animation, without consulting with Boeing, the aircraft manufacturer. The group at the CIA who produced the animation were not qualified to simulate aircraft flight paths.

5. Both the CIA and NTSB crash sequence simulations are inaccurate since they diverge from the radar tracked flight path and deviate from the tolerances imposed by the FAA radar tracking. The simulations do not match the observations of the witnesses with descriptions of the early crash sequence.

6. There remain significant anomalies in the way this investigation was conducted. There were numerous violations of customary and normal investigative protocol, which are contrary to the provisions set forth in title 49 CFR 830 and NTSB Board orders.

7. Contrary to legal directives set forth in the Code of Federal Regulations, the NTSB allowed their investigation to be superseded by the FBI's investigation.

8. The NTSB's probable cause determination for the crash of TWA Flight 800 is not supported by the physical evidence, the witness statements, or other facts.

Summary

A preponderance of hard evidence, including radar and forensic evidence, combined with dozens of corroborating eyewitness accounts, refute the NTSB's probable cause determination for the crash of TWA Flight 800. The NTSB concluded that an electrical short circuit initiated TWA 800's demise. The source of that short circuit was never found and no hard evidence supporting the official probable cause has ever been presented. The available hard evidence, which is corroborated by eyewitness accounts, indicates that at least one detonation outside the aircraft initiated its destruction.

Two new analyses of the radar evidence presented in this petition clearly show proof of this high velocity explosion or detonation. We have found no analysis of this radar evidence in the NTSB's final report or any other NTSB report or study.

We have also determined that the eyewitness evidence was misrepresented, resulting in inaccurate conclusions being drawn and conveyed by both the CIA and the NTSB. It should first be noted here that contrary to established NTSB policies and procedures, eyewitness evidence was not made available to NTSB investigators and other parties during the critical early stages of the investigation. The Witness Group Chairman assigned to present the NTSB's final conclusions based upon eyewitness evidence interviewed only one out of 670 eyewitnesses. At the Sunshine Hearing, the Witness Group Chairman misrepresented eyewitness observations and presented inaccurate conclusions based on those misrepresentations.

The new evidence and analyses presented in this petition show that the NTSB probable cause determination and findings are erroneous. Therefore, according to NTSB policy and legal directives, the NTSB must reconsider its probable cause determination of the crash of TWA Flight 800.